

MSS4

Small Municipal Separate Storm
Sewer Systems

Edited 2/22/08

What is a **MS4** program?

Small Municipal Separate Storm Sewer Systems

- Federal EPA's effort to keep our streams and ocean clean.
- Part of National Pollutant Discharge Elimination System (NPDES)
 - Zero pollution discharge

What's the problem?



When it rains, pollution such as litter, pesticide, household chemicals and etc...



... washes down through gutters and streams and eventually into the ocean.



Path of rain droplets (an example)

Palolo Valley, Maunalani Heights and Kaimuki
rainwater ends up in...



...the Ala Wai Canal...



...and eventually the ocean and Waikiki Beach



Who's affected?

Yum... Sashimi...



We all are!

Water is essential for life.

We play in it...



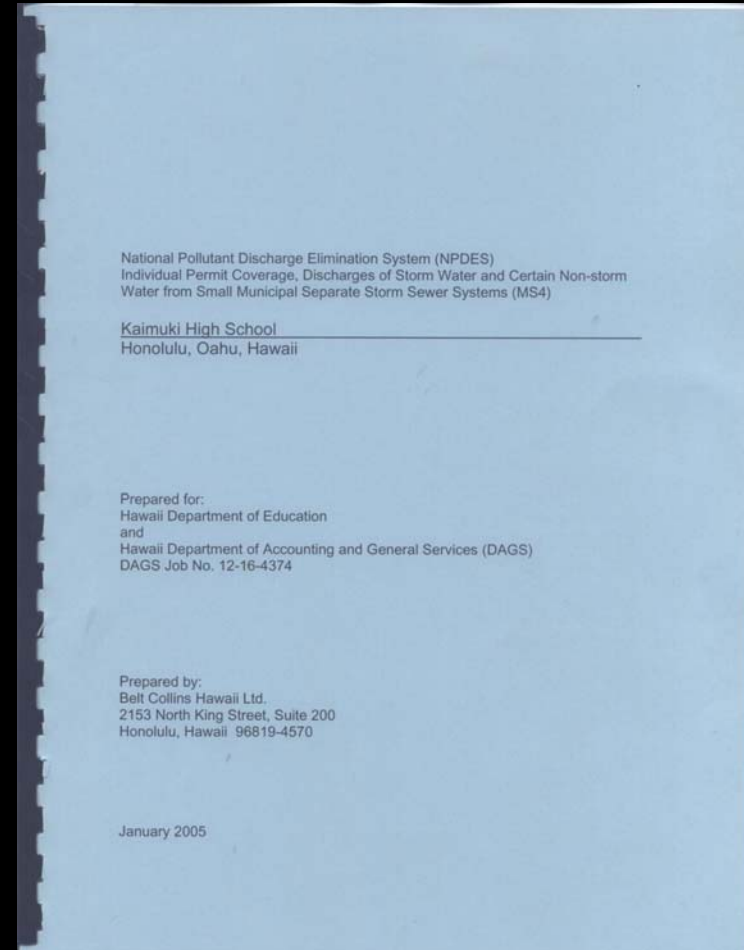
How does it affect DOE?

- 169 Oahu schools
 - ❑ Incrementally over 6 years
 - ❑ Critical watershed areas first

- Why Oahu only?
 - ❑ Urban density & higher concentration of pollution

DOE's MS4 program

- Prepared by consultants, Belt Collins Hawaii Ltd. (BCH), began in January 2005
 - ❑ Schools receive binder for easy insertion & record keeping.
 - ❑ Completed MS4 Annual Report form due to BCH the first week of December, every year.



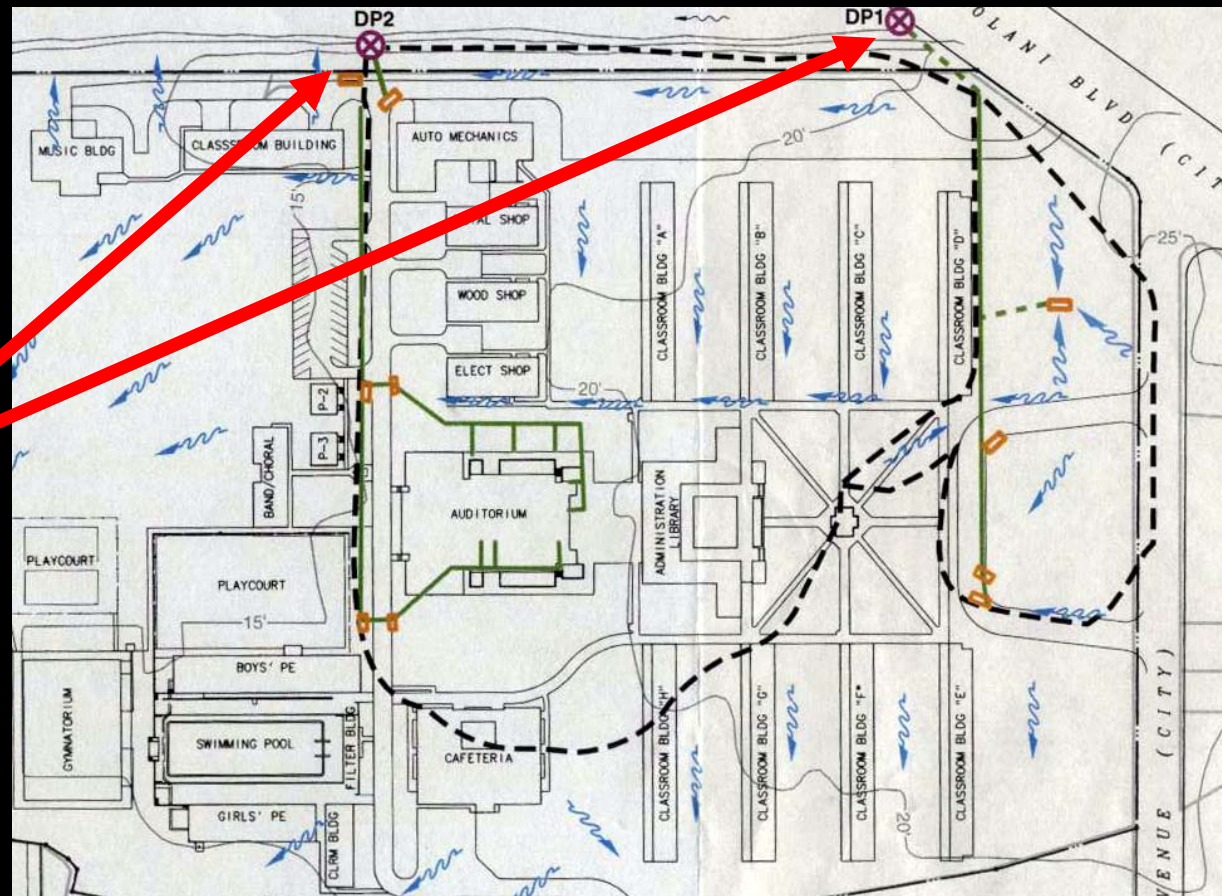
DOE's MS4 program

- **CWB-NOI Form K**
- **Figure 1 – Topography**
- **Figure 2 – Drainage Basins & Storm Water System**
- **Attachment A – Receiving State Waters**
- **Attachment B – Flow Chart**
- **Attachment C – Storm Water Management Plan**
 1. Public education and outreach
 2. Public involvement/participation
 3. Illicit discharge detection and elimination
 4. Construction site runoff control
 5. Post-construction storm water management
 6. Pollution prevention/good housekeeping

DOE's MS4 program

Kaimuki HS – Figure 2. Drainage Basins & Storm Water System

**Drains
discharge
to stream**



Shows location of catch basins, storm water flow and discharge points.

DOE's MS4 program Measurable Goals

(Attachment C – Storm Water Management Plan)

- Number of publications distributed – at least 90% of school or group
- **Number of cleanup participants – at least 20% of school or group**
- Number of Campus Use of Facilities Agreements – given to at least 90% of users
- **Number of Campus Specific fact sheets – at least 90% of school**
- Number of Enforcement Actions: Use of Facilities or other on-campus activity
- **Best Management Practices (BMPs) for all construction on campus – coordinate with DOE and designate on-campus staff; record problems during and after construction projects**

Measurable Goals (con.)

Goals that Custodians can help with:

- Record storm drain cleaning and amounts of debris removed (in pounds)
- **Identify and use best management practices for maintenance and grounds keeping – reduce chemical use, prevent spills, proper storage under cover, maintain ground cover**
- Record and report problem areas: litter, erosion, improper chemical use
- **Note changes in litter on campus – record amounts collected (in pounds)**
- Photos of drains and problems; before and after

Two types of drain systems

In Hawaii, sanitary sewers and storm drains are individual and separate systems.



Sanitary Sewer

Wastewater is **treated** at wastewater treatment plants, **THEN** released into the ocean.

- Toilets
- Sinks
- PE Showers
- Cafeteria wash basins
- Floor mop basins
- Chemicals from science labs
- Swimming pool backwash

Storm Drain

Rain water

- Goes to Ocean without treatment.
- Carries whatever it can down hill
 - NPDES states no pollutants
- Also requires permit to connect to City or State owned storm drain system, if applicable (Drainage Connection License)

Storm Drain

Natural flow (slower flow and thus pollutants settle)

Rain → ground absorption → ponding → leaks
to Stream → eventually Ocean

Impervious system (quick flow carries more
pollutants)

Roof → down spouts → concrete/asphalt →
underground drain system → high flow to
Streams and Ocean

Common pollutants on campus

- Litter
- Bulky waste (Monitors, AC, refrigerator)
- Open trash bins
- Chemicals & Fertilizer
- Cleaning detergents
- Automotive oils, grease, car battery
- Green waste (leaves, pods, branches)
- Sediment, bare dirt, eroded banks, soil stockpile

Litter



Bulky waste to be picked up



Storage should be under cover
and with secondary containment

Open trash bin



Rain falls into the trash bin...

contaminated water leaks out...

Chemical and paint leaks



Use absorbent and dispose properly, never hose down spills

Green waste



Storm water pushes surrounding leaves, branches and soil into the drain inlet

Problem



Plants growing out of the curb inlets - pipes below are probably full of dirt.



Classroom flooding is more likely during rain storms without clean drainage system..

Bare dirt



Unprotected soil



Poorly installed silt fence



Non-functional silt fence



**Drain is protected with a cover;
street and gutter need regular
cleaning during project**



Poor attempt to protect drain inlet



Rain → brown contaminated water



Good housekeeping procedures

- **Inspect and maintain storm drain system**
 - ❑ Suggest weekly visual inspections or after heavy rains
 - ❑ Schedule monthly clean ups
 - ❑ DOE work order if beyond custodian's reach
(Do not go into inlets deeper than waist level)
 - ❑ Do not flush pollutants into or through drain system
- **Minimize use of chemicals & fertilizers on campus**
- **Minimize waste generation**
 - ❑ Recycle programs
 - ❑ Green waste
 - ❑ Purchase products with less packaging

Good housekeeping procedures

- **Report illegal dumping to school principal**
 - ❑ City's Environmental Concern line 692-5656
 - ❑ Hazardous material 247-2191 (DOH) call anytime
 - ❑ DOE bulky item pickup, use work order 586-3456
 - ❑ Home bulky item pickup (residential only)
www.opala.org
 - ❑ Document - Custodial Storm Drain Inspection Log
- **Protect potential pollutants from rain**
 - ❑ Containers, tarps
 - ❑ Covered trash bins
 - ❑ Repair dirt patches, especially on slopes
 - ❑ Timely rubbish disposal

Good housekeeping procedures

School activities

Use newly revised **Use of Facilities Form**

➤ **Car wash**

- ❑ Avoid unless able to contain soapy water on campus

➤ **Craft fairs & food booths**

- ❑ Be aware of wash down, especially food stands
- ❑ Need to patch up bare grass shortly after fair

Recognize good construction practice



Simple Best Management Practice



Keep campus green.

Allow grass to grow tall to act as a natural filter, and slow runoff

Campus Clean up

- Education & awareness
- Obtain buy in (all users)
- Stenciling of storm drain inlets
- Keep good records
 - Sign in
 - Photographs of before and after (in color)
 - Estimate pounds of rubbish collected
 - Types of rubbish collected; recycled

MANDATORY

year end reporting

- Look through the permit folder
- Keep good records
 - ❑ Number of fliers distributed, etc. (Measurable Goals)
 - ❑ Copies of handouts; sign in for all activities
 - ❑ Color photographs
 - ❑ Custodial Storm Drain Inspection Log
- **Submit by December 5th, Annually**
 - To Belt Collins Hawaii Ltd., DOE contractor

Reference info: DOE

➤ DOE Facilities Development Branch

Planning Section – General information & project request
Phone: 377-8311

➤ DOE Utility Crew for bulky removal

Fill out work order for Facilities Support Section
(furniture, pianos, and large household goods)

School pays for computers, AC & refrigerators

Questions: 594-0595 or 586-3456

Response Center Help Line: 831-6731

Reference info: City & County

- City Environmental concern line (illegal dumping)

Phone: 692-5656

- City and County of Honolulu Department of Environmental Services

www.opala.org

Phone: 692-5410

Additional information: DOH

- **Hazard Evaluation and Emergency Response (HEER)**
Illegal dumping or spills of chemicals, antifreeze, etc.
Phone: 247-2191 (call 24/7)
- **Pollution Prevention: Janitorial Cleaning, Fluorescent Lights, Painting Bulletins**
www.state.hi.us/health/environmental/waste/p2waste/min/index.html
- **Solid Waste Disposal Fact Sheets**
www.state.hi.us/health/environmental/waste/sw/index.html **Recycling – Bottle Bill** www.hi5deposit.com
- **Clean water - NPDES**
<http://hawaii.gov/health/environmental/water/cleanwater/index.html>

Additional information: EPA

- **Best Management Practices for Stormwater Phase II**

<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm>

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